Influenza Immunization Report

2014-2015 Influenza Season

Population Health Assessment and Surveillance

NOVA SCOTIA

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List of Abbreviations

AEFI	Adverse Event Following Immunization
ANDS	Application for Notifiable Disease Surveillance
DHA	District Health Authority
DHW	Department of Health and Wellness
HCF	Health care facility
LTCF	Long-term care facility
MSI	Medical Services Insurance
NACI	National Advisory Committee on Immunization
NS	Nova Scotia
PHAC	Public Health Agency of Canada
PHS	Public Health Services
TIV	Trivalent Influenza Vaccine
WHO	World Health Organization

Introduction

Influenza is an illness of the respiratory tract caused by influenza A and B viruses, characterized by the acute onset of fever, headache, myalgia, prostration, sore throat and cough. Influenza derives its public health importance from the epidemic potential of the virus and the associated morbidity and seriousness of complications. Immunization is widely recognized as the most effective means to reduce the morbidity and mortality associated with influenza. Each year in Canada, the National Advisory Committee on Immunization (NACI) publishes a statement with recommendations identifying the groups that should be targeted by seasonal immunization programs (1). With evidence showing that influenza vaccination benefits those of all ages, NACI recommends that everyone aged 6 months or older receive the vaccine. A particular focus is placed on people at high risk of influenza-related complications or hospitalization and people capable of transmitting influenza to those at high risk. Groups at high risk include, but are not limited to: people of any age who are residents of nursing homes and other chronic care facilities, people over 65 years old, children 6-59 months old, pregnant women, those with immune compromising conditions and Aboriginal peoples living on reserve. In 2005, PHAC issued a national immunization coverage goal of 95% coverage of residents of long-term care facilities and staff who have extensive contact with residents (2).

In 2010, the Nova Scotia Department of Health and Wellness (DHW) implemented a universal publicly funded influenza vaccine program providing vaccines free of charge to all individuals 6 months of age or older. In the fall of each year, DHW provides a supply of vaccines to the district public health offices that in turn distribute the vaccines to physician practices, pharmacies and other health care providers. Administration of the influenza vaccine is offered by multiple health care providers in the Province of Nova Scotia. The 2014-2015 influenza season marks the second year where pharmacists have been included as immunizers for Nova Scotians aged 5 and over.

This report reviews seasonal influenza vaccine coverage rates for the Nova Scotia population with a focus on select sub-groups of interest. The report also includes information on the number of adverse events following immunization (AEFIs) among individuals who were administered the influenza vaccine during the 2014-2015 influenza season. These events are define by WHO as "any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine" (3). These events are rarely severe.

Methods

Influenza immunization began in October 2014. This report includes data from the 2014-2015 season. Data on the number of individuals who received the vaccine was extracted from three sources:

1. Provincial Medical Services Insurance (MSI) physician-billing database (provides data on individuals who received influenza immunizations by physicians);
2. MSI Pharmacare database (provides data on individuals who received influenza immunizations by pharmacists); and
3. DHW data collection tools used by district public health services (PHS). These data collection tools capture aggregate summaries of immunization data from clinics, long term care and acute care facilities (e.g. IWK), and other community agencies (e.g., Victorian Order of Nurses).

Vaccine coverage rates represent the number of individuals who received the vaccine as a proportion of the total number of individuals eligible to receive the vaccine. Denominator data for the population vaccine coverage rates are obtained from Statistics Canada and are estimates based on the 2013 Census (estimates as of July 2014). The denominator for pregnant women is the total number of live births and stillbirths reported to Nova Scotia Vital Statistics for 2014. In order to calculate complete coverage rates for acute care facilities the total number of staff, volunteers, and residents/patients who received influenza vaccine, either at the facility or by another provider, was reported by District Health Authorities (DHAs). The IWK also separately reports the number of staff and volunteers who have received the influenza vaccine. The IWK immunization rate is reported alongside DHAs under "Health Care Workers in Acute Care Facilities." Aboriginal status is captured in PHS data only. Denominator data on the Aboriginal population in Nova Scotia was also obtained from the 2013 Census.

On April 1, 2015, Nova Scotia launched a new health system structure to create a foundation for better health and health care. The nine previous district health authorities have come together as the Nova Scotia Health Authority, partnering with the IWK Health Centre. Data for 2014-2014 was collected under the previous DHA structure, and is reported as such.

Data related to AEFIs was obtained from reports to PHAC, and cross-checked with reports in DHW's provincial Application for Notifiable Disease Surveillance (ANDS).

Several exclusions were made from the data:

- Persons reported as pregnant over the age of 50 (likely to be data reporting errors)
- Males reported as pregnant (data reporting error)
- Persons not meeting age requirement (i.e. those under the age of 5 immunized by pharmacists, those under 6 months of age immunized by any provider) (data reporting errors)
- Second doses provided to children by pharmacists

The total number of observations excluded from this report is outlined in the results section.

It is of note that influenza vaccine administration processes and collection of vaccine coverage data during the 2009–2010 pandemic influenza season were unique to that year, and as such, data will not be compared to the 2009-2010 season in this report. Immunization rates in facility-based populations, as well as in certain NACI target groups for the past five influenza seasons were obtained from past-year reports, and compared to 2014-2015 rates.

Limitations

With the exception of the computerized MSI physician-billing database and the MSI Pharmacare database, surveillance data were collected in a paper-based format from the sources described above. Although the paper-based method may not be as reliable or up-to-date, districts have been reporting in paper-based format since the inception of immunization reporting, and should thus have ample experience with this reporting practice. The province of Nova Scotia does not currently have an electronic vaccination registry for handling immunization records.

Coverage rates among health care workers in acute care facilities cannot be compared over time. Historically, health care workers were distinguished as direct contact and support staff, but these categories were never clearly defined, leading to inconsistencies in reporting. Furthermore, during the 2009-2010 influenza pandemic, health care worker denominator data was not available and as a result, coverage rates could not be calculated. Data for this target group were not collected for the 2010-2011 influenza season and so rates were not available for this season. Health care worker immunization data collection resumed for the 2011-2012 influenza season.

There may be under-reporting of coverage rates in some long-term care and health-care facilities, as some do not report on staff/patients immunized by other providers external to the facility (family physicians, etc.). Coverage rates in these individual facilities may therefore be underestimated, though those immunized by other providers would still be reflected in the provincial immunization rate. There is a possibility for duplicate reporting of a facility staff member who may have received the vaccine from a physician (captured in the MSI database), and as well, would be reported by the employee's facility To partially address this issue, only staff and volunteers listed as immunized in-house were included when calculating the provincial immunization rate.

Duplicate reporting is possible in children under the age of 9 receiving the seasonal influenza vaccine for the first time, where a second dose of the vaccine is recommended by NACI (at least four weeks apart) (1). The only immunization providers that currently account for second doses in their reporting are pharmacists. It is therefore difficult to determine the number of doses administered to a specific individual. Each dose (with the exception of those second doses recorded by pharmacists) is counted as someone being fully immunized. Therefore, the numbers presented in this age group may overestimate the true vaccine coverage rate.

Results

Influenza Vaccine Coverage Summary

For the 2014-2015 influenza season, 470,000 doses of seasonal trivalent influenza vaccine (TIV) were distributed to district public health as part of the publicly funded influenza immunization program. Of these, PHS distributed a total of 466,300 doses (99.2 %) of influenza vaccine to vaccine providers. A total of 97 (~0.03%) reported immunizations were excluded from the analysis due to one or more reasons outlined in the methods section.
The overall 2014-2015 vaccine coverage rate for NS was 39.9% (Table 1), which was lower than the 2013-2014 rate (41.8%). The coverage rate by DHA ranged from 33.5% (DHA 6) to 44.1% (DHA 4) in the 2014-2015 season.

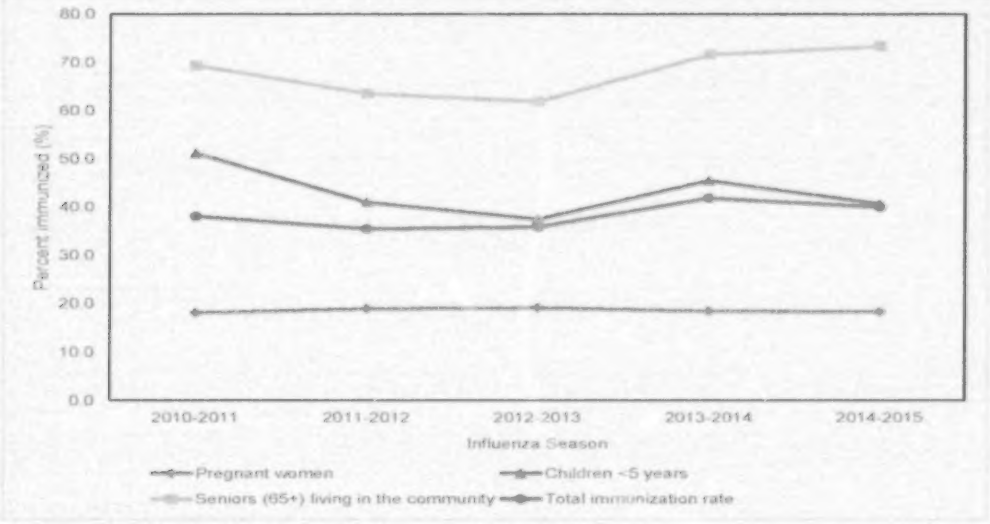
Table 1: Influenza vaccine coverage by provider type for those 6 months of age and older by DHA, Nova Scotia, 2014-2015 influenza season.

DHA	DHA Population (6 mos and older)	Vaccinated by physicians		Vaccinated by public health/other		Vaccinated by pharmacist		Total vaccinated	
		n	%	n	%	n	%	n	%
1	58,646	16,525	28.2	2,475	4.2	5,267	9.0	24,267	41.4
2	56,774	8,309	14.6	3,123	5.5	8,639	15.2	20,071	35.4
3	81,619	22,586	27.7	2,853	3.5	7,430	9.1	32,869	40.3
4	71,758	21,381	29.8	3,198	4.5	7,077	9.9	31,656	44.1
5	30,963	5,504	17.8	1,632	5.3	3,261	10.5	10,397	33.6
6	45,792	5,340	11.7	2,762	6.0	7,257	15.8	15,359	33.5
7	43,363	8,124	18.7	2,650	6.1	5,000	11.5	15,774	36.4
8	118,174	28,175	23.8	9,823	8.3	11,283	9.5	49,281	41.7
9	429,326	106,438	24.8	20,046	4.7	40,151	9.4	166,635	38.8
Unknown	-	7,138	-	-	-	10	-	7,148	-
Nova Scotia	936,414	229,520	27.2	48,562	5.2	95,375	10.2	373,457	39.9

Influenza Vaccine Coverage Estimates for Select Target Populations

Select Target Groups: 5-Year Summary
The immunization rate in pregnant Nova Scotian women has remained constant over the past five years, hovering at just under 20%. Immunization in pregnant women is consistently under the total provincial immunization rate. The immunization rate for children under 5 years old has decreased from the 2013-2014 season, from 45.4% to 40.6%. Among seniors aged 65 years and over living in the community, the immunization rate has increased slightly since the 2013-2014 influenza season, from 71.6% to 73.3%. The immunization rate for both of these target groups has remained above the total provincial immunization rate each influenza season (Figure 1).

Figure 1: Influenza vaccine coverage percent in selected community-based populations, Nova Scotia, past 5 influenza seasons (2010-2015).



Select Target Groups: 2014-2015 coverage

Children 6 to 59 Months of Age

The influenza vaccine coverage rate for children aged 6 to 59 months was 40.6%. The majority of children aged 6 to 59 months were vaccinated by primary care physicians. As previously stated, pharmacists do not immunize children under the age of 5. The vaccine coverage rate for children by DHA ranged from 16.8% (DHA 5) to 49.0% (DHA 9) (Table 2).

Table 2: Influenza vaccine coverage for children 6 to 59 months of age by provider and DHA, Nova Scotia, 2014-2015 influenza season.

DHA	Population aged 6 – 59 months	Vaccinated by physicians		Vaccinated by public health/other		Total vaccinated	
		n	%	n	%	n	%
1	2,011	651	32.4	25	1.2	676	33.6
2	2,077	364	17.5	41	2.0	405	19.5
3	3,289	1,215	36.9	7	0.2	1,222	37.2
4	3,389	1,385	40.9	86	2.5	1,471	43.4
5	1,132	176	15.5	14	1.2	190	16.8
6	1,853	357	19.3	92	5.0	449	24.2
7	1,764	468	26.5	46	2.6	514	29.1
8	4,637	1,270	27.4	367	7.9	1,637	35.3
9	19,099	9,298	48.7	56	0.3	9,354	49.0
Nova Scotia	39,250	15,184	50.8	734	1.9	15,918	40.6

Adults 65 Years of Age and Older

This group includes adults 65 years of age and older who are not residents of a long-term care facility (i.e. seniors living in the community). The national target for vaccine coverage in adults 65 years of age and older is 80%. Nova Scotia data indicate that this target has not been met in any of the past 5 influenza seasons. The coverage rate for the 2014-2015 season was 73.3%. The vaccine coverage rate for seniors living in the community by DHA ranged from 60.1% (DHA 5) to 86.1% (DHA 4) (Table 3).

Table 3: Influenza vaccine coverage rates for community residents 65 years of age and older by DHA, Nova Scotia, 2014-2015 influenza season.

DHA	DHA Population Aged 65 and over*	Vaccinated by physicians		Vaccinated by public health/other		Vaccinated by pharmacists		Total vaccinated	
		n	%	n	%	n	%	n	%
1	13,271	7,251	54.6	249	1.9	2,135	16.1	9,635	72.6
2	11,776	3,589	30.5	101	0.9	3,760	31.9	7,450	63.3
3	15,582	9,319	59.8	152	0.0	2,489	16.0	11,960	76.8
4	11,751	7,453	63.4	388	3.3	2,274	19.4	10,115	86.1
5	6,865	2,570	37.4	227	3.3	1,327	19.3	4,124	60.1
6	8,789	2,316	26.4	431	4.9	2,869	32.6	5,616	63.9
7	8,627	3,276	38.0	358	4.1	1,965	22.8	5,599	64.9
8	23,514	11,284	48.0	1,225	5.2	4,216	17.9	16,725	71.1
9	58,167	31,574	54.3	747	1.3	10,518	18.1	42,839	73.6
Unknown	-	1,974	-	0	-	9	-	1,983	-
Nova Scotia	158,342	80,606	50.9	3,878	2.4	31,562	19.9	116,046	73.3

*Excluding residents of long-term care facilities

Pregnant Women

The percentage of pregnant women who received the influenza vaccine in the province during the 2014-2015 influenza season was 18.8%. The majority of pregnant women were vaccinated by physicians.

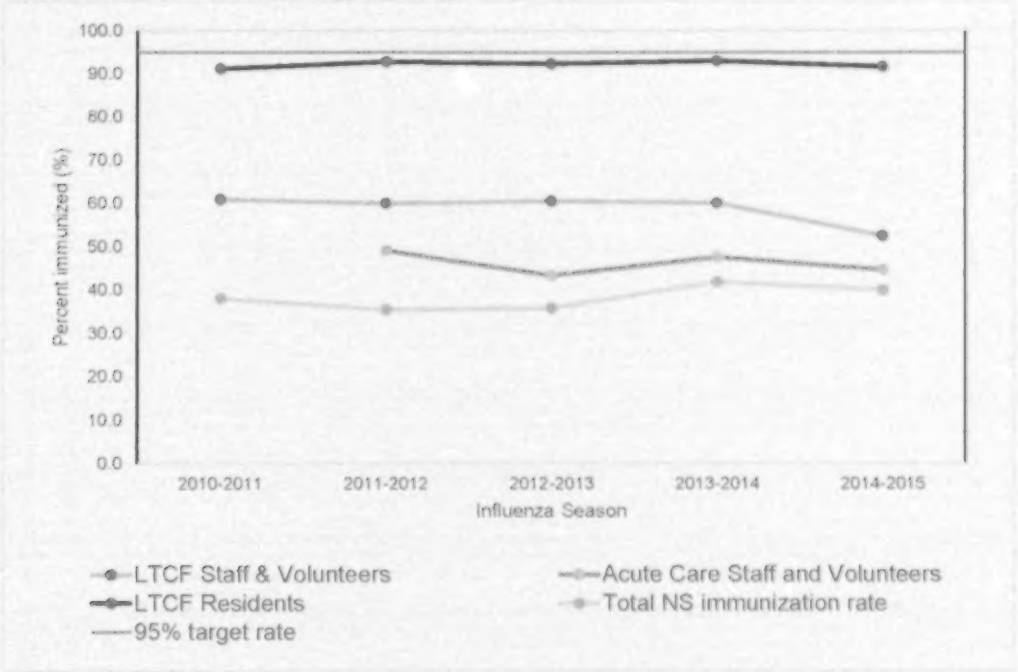
Aboriginal Persons Living on Reserve

Physicians do not collect data on Aboriginal status, thus, the vaccine coverage rate in Aboriginal persons is most likely underestimated and should be interpreted with caution. Based on the data collected by other health care providers and pharmacists, 20.4% of Aboriginal persons living on reserves received the influenza vaccine during the 2014-2015 season.

Influenza Vaccine Coverage in Staff, Volunteers and Residents of Acute and Long-Term Care Facilities

The overall vaccine coverage rates for residents of LTCFs in Nova Scotia have been above 90% since 2002, however, the target of 95% has not been met in the province in the previous five seasons. For the 2014-2015 influenza season, the vaccine coverage rate in LTCF residents was 91.6%. This is similar to the coverage rate reported in previous years (Figure 2). The vaccine coverage rate for staff and volunteers of acute care facilities has been above the provincial immunization rate for the past five seasons; however, it has consistently remained below 50% (Figure 2).

Figure 2: Influenza Vaccine Coverage Rate in Selected Care Facility-Based Populations, Nova Scotia, Past 5 Influenza Seasons (2010-2015).



Health Care Workers in Acute Care Facilities

The vaccine coverage rate for health care workers in acute care facilities for the 2014-2015 season was 44.5%. The vaccine coverage rate of health care workers vaccinated ranged from 30.1% (DHA 1) to 53.8% (IWK) (Table 4).

Table 4: Percentage of health care workers in acute care facilities vaccinated for influenza, Nova Scotia, 2014-2015 influenza season.

DHA	Total Vaccinated	Number of Staff & Volunteers in Facility	% Vaccinated
1	607	2,014	30.1
2	656	1,536	42.7
3	911	1,596	57.1
4	527	1,245	42.3
5	394	780	50.5
6	519	1,410	36.8
7	542	1,078	50.3
8	1,990	3,774	52.7
9	5,155	12,655	40.7
IWK	1,748	3,252	53.8
Nova Scotia	13,049	29,340	44.5

Residents and Staff of Long-Term Care Facilities

The national target coverage rate of 95% of residents, staff and volunteers was reached in 4% (5/120) of the LTCF in Nova Scotia for the 2014-2015 influenza season (Table 5). The highest percentage of facilities meeting the 95% PHAC target coverage rate is 16.7% in DHA 7. In DHAs 1, 2, 3, 5, 8 and 9, none of the facilities met the 95% target coverage rate.

Table 5: Number and percent of long-term care facilities that met the national target for influenza immunization coverage (95%) of staff, volunteers, and residents, Nova Scotia, 2014-2015 influenza season.

DHA	Met Target	Did Not Meet Target	% Met Target
1	0	10	0.0%
2	0	10	0.0%
3	0	14	0.0%
4	2	13	13.3%
5	0	11	0.0%
6	1	6	14.3%
7	2	10	16.7%
8	0	21	0.0%
9	0	25	0.0%
Nova Scotia	5	120	4.0%

Coverage among residents of LTCFs by DHA ranged from 87.3% (DHA 1) to 96.1% (DHA 4) (Table 6).

Table 6: Influenza immunization coverage for residents of long-term care facilities by DHA, Nova Scotia, 2014-2015 influenza season.

DHA	Total Vaccinated	Number of Residents in LTCF	% Vaccinated
1	562	644	87.3
2	531	595	89.2
3	981	1,035	94.8
4	586	610	96.1
5	403	454	88.8
6	454	476	95.4
7	495	528	93.8
8	1,239	1,407	88.1
9	2,578	2,800	92.1
Nova Scotia	7,829	8,549	91.6

Overall, staff and volunteers of LTCFs had a 63.3% coverage rate in the province (Table 7). The coverage rate by district ranged from 53.8% (DHA 2) to 81.2% (DHA 4).

Table 7: Influenza immunization coverage rates for staff and volunteers of long-term care facilities by DHA, Nova Scotia, 2014-2015 influenza season.

DHA	Total Vaccinated	Number of Staff & Volunteers in LTCF	% Vaccinated
1	1,044	1,821	57.3
2	855	1,589	53.8
3	1,875	2,650	70.8
4	1,268	1,561	81.2
5	620	960	64.6
6	846	1,249	67.7
7	1,045	1,411	74.1
8	2,337	4,025	58.1
9	4,786	7,929	60.4
Nova Scotia	14,676	23,195	63.3

Adverse Events Following Immunization (AEFI)

During the 2014-2015 Nova Scotia seasonal influenza immunization campaign, there were 17 adverse events following immunization (AEFI) that met the case definition for reporting. There were 9 allergic reactions and the remaining AEFIs were rashes and local reactions. Two cases were admitted to hospital and recovered.

References

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